

## **Digital Camera HS 102H**

Camera was especially designed as a detection system for different kind of spectrometers. It has excellent sensitivity in a spectral range from 200 to 1100 nm. The camera uses Back-Thinned CCD image sensors from Hamamatsu.

### **Features**

- Embedded Personal Computer Pentium MMX class.
- Highly sensitive in a broad spectral region.
- Quantum efficiency of CCD sensor up to 90 %.
- Low dark current and readout noise.
- Advanced features for programming of a operating modes of the camera:
  - binning and grouping;
  - spectral binning for several spectral stripes;
  - regions of interest (ROI);
- Input/output synchronization modes.
- Direct shutter control.
- High-speed interface – 10/100 Ethernet.
- Internal camera memory (RAM) – up to 128 MB.

### **Application**

As a detection system of different kind of spectrometers.

### **Specifications**

- The camera provides the following operating modes:
  - mode of a full image with the maximal resolution;
  - mode of a full vertical binning;
  - «one-track» mode;
  - «multi-track» mode;
  - operating mode with a regions of interest (ROI).
- The camera provides the following modes of the readout:
  - normal (Large Full Well Mode);
  - inverted (MPP (multi-pinned phase) Mode).
- Rate of the readout – 500 kHz and 1 MHz.
- Type of a sensor – the Back-Thinned CCD (charge-coupled device) from Hamamatsu (Japan).
  - number of active pixels – 2048 x 14
  - active area (H x V) - 28,672 x 0,196 mm
  - spectral response range –from 200 to 1100 nm
  - quantum efficiency – up to 90 % ( $\lambda = 650$  nm)
  - typical full well capacity – 130 000 electrons
  - typical RMS deviation readout noise - 25 electrons
  - typical dark current – 40 pA/cm
  - max. readout speed -5 MHz

- Rating value of the distance from a forward plane of the camera up to photosensitive field CCD – 10 mm.
- Cooling CCD – without cooling.
- Exposure time – from 2  $\mu$ s up to 7,5 h.
- Time of a delay before exposure – from 2  $\mu$ s up to 7,5 h.
- Time of a delay after exposure – from 2  $\mu$ s up to 7,5 h.
- ADC (analog-digital converter) of the camera – 14 bit.
- Dynamic range – not less than 5 000.
- The interface of connection with a personal computer – «Ethernet 100 Base-T» under the protocol TCP/IP.
- Power – 24 VDC. The external power adapter 100 – 240 VAC/24 VDC is included in the complete set of delivery.
- Power consumption – not more than 15 V·A.
- Overall dimensions of the camera (length  $\times$  depth  $\times$  height) – not more than 110 $\times$  180  $\times$  95 mm.
- Weight of the camera – not more than 2,0 kg.